

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

2017 Quantitative Milestone Report for 2006 24-hour PM_{2.5} National Ambient Air Quality Standard

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BACKGROUND

The South Coast Air Basin (Basin) was classified as “moderate” nonattainment for the 2006 24-hour PM_{2.5} National Ambient Air Quality Standard (NAAQS) of 35 µg/m³ on December 14, 2009, with an attainment date of December 31, 2015. In July 2015, the SCAQMD submitted a formal request to the U.S. EPA to reclassify the Basin as a “serious” nonattainment area for the 2006 24-hour PM_{2.5} NAAQS, based on the monitoring data indicating attainment was not practicable by December 31, 2015. Subsequently, the U.S. EPA reclassified the Basin as “serious” nonattainment for the 2006 24-hour standard effective February 12, 2016 with an attainment date of December 31, 2019.

The Clean Air Act (CAA) Section 172 (c)(2) requires that State Implementation Plans (SIPs) for nonattainment areas demonstrate reasonable further progress (RFP) towards attainment through emission reductions phased in from base year until the attainment date, as provided in the SIP submission. The RFP requirements in the CAA are intended to ensure that there are sufficient emission reductions in each nonattainment area to attain the NAAQS by the applicable attainment date. Per CAA Section 171(1), RFP is defined as “such annual incremental reductions in emissions of the relevant air pollutant as are required by this part or may reasonably be required by the Administrator for the purpose of ensuring attainment of the applicable national ambient air quality standard by the applicable date.” As stated in the Addendum to the General Preamble (59 FR 41998), the goal of the RFP requirements is for non-attainment areas to achieve generally linear progress toward attainment. The U.S. EPA’s final rule, “*Fine Particulate Matter National Ambient Air Quality Standards: State Implementation Plan Requirements*” (81 FR 58010), provides that when determining RFP, the plan must rely only on emission reductions achieved from sources within the nonattainment area. Section 172(c)(2) of the CAA requires that nonattainment area plans show ongoing annual incremental emissions reductions toward attainment, which is commonly expressed in terms of benchmark emissions levels or air quality targets to be achieved by certain interim milestone years. The U.S. EPA also requires that the RFP emission inventories for milestone years include direct PM_{2.5}, as well as PM precursors (i.e., SO_x, NO_x, NH₃ and VOCs) that have been determined to be significant (81 FR 58010).

For PM_{2.5} nonattainment areas, in addition to the CAA Title I, Part D, Subpart 1 (*General Requirements*) RFP requirements, Subpart 4 (*Provisions for PM*) Section 189(c)(1) introduces the requirement for states to achieve quantitative milestones for both “moderate” and “serious” areas. Milestones are to be achieved every three years and to demonstrate RFP until the area is re-designated for attainment. For an area designated

nonattainment for the 2006 PM_{2.5} NAAQS before January 15, 2015, the attainment plan shall contain quantitative milestones to be achieved no later than 3 years after December 31, 2014, and every 3 years thereafter until the milestone date that falls within 3 years after the applicable attainment date (CFR §51.1013 (a)(4)). Therefore, for the Basin (with an effective date of designation of December 14, 2009), the milestone year is 2017 for the 2006 24-hour PM_{2.5} standard. Year 2020 is added as another milestone year in the 3-year period beyond the attainment date.

Clean Air Act Section 189(c)(2) further requires that, within 90 days of each milestone, each affected state must submit a demonstration that all measures have been implemented according to the approved RFP plan and that the quantitative milestone has been met. The 2016 Air Quality Management Plan (AQMP) Appendix VI-C (Table VI-C-3A) quantified the emission reductions required to demonstrate RFP between the 2012 base year and the 2019 attainment year. As indicated in the 2016 AQMP, in the 2017 milestone year, RFP could be achieved based on baseline emissions. Baseline emissions incorporate emission reductions generated from control measures that are already adopted as well as growth factor projected for each sector. The rules and regulations that contribute to the change in baseline emissions between 2012 and 2017 were identified in the 2016 AQMP Appendix VI for stationary sources (Table VI-C-4) and for mobile and area sources (Attachment VI-C-1). The tracking of these quantitative milestones, as identified in the 2016 AQMP, is needed to ensure that the RFP targets are met.

The objective of this quantitative milestone report is to demonstrate that the SCAQMD has reviewed its commitments in the 2016 AQMP, has verified that the emissions reductions needed to demonstrate RFP have been achieved, and that ongoing progress is being made to meet the 2019 attainment date.

EMISSION INVENTORY

Emission reductions required under this RFP plan for the PM_{2.5} standard are directly emitted PM_{2.5} emissions and precursor air pollutants, namely NO_x, SO_x, VOC and NH₃. The base year for the purposes of tracking RFP for PM is 2012, which is the base year of the 2016 AQMP emissions inventory. The 2006 24-hour PM_{2.5} NAAQS baseline emissions for milestone years are shown in the 2016 AQMP Appendix VI (Table VI-C-3), which is reproduced below as Table 1 and summarizes emissions inventories that contribute to RFP, by pollutant.

For 2019 (the attainment year for the 2006 24-hour PM_{2.5} standard of 35 µg/m³), the future years PM_{2.5} 24-hour average design values were projected as part of the 2016 AQMP attainment demonstration (2016 AQMP, Table 5-6). This simulation used the projected baseline emissions from 2012 which include all adopted control measures that will be implemented by December 31, 2019. The 2019 baseline emissions is 63.9 tons per day (tpd) for PM_{2.5}, 353 tpd for NO_x, 16.6 tpd for SO_x, 376 tpd for VOC and 74.0 tpd for NH₃. Modeling of the 2019 baseline emissions indicates that the Basin will attain the federal 24-hour PM_{2.5} standard in 2019 without the need for additional controls. Among various PM_{2.5} monitoring sites in the Basin, the highest PM_{2.5} levels are usually observed at the Mira Loma site. The projected 2019 design value is 32.1 µg/m³ at Mira Loma.

Table 1*
24-hr PM_{2.5} Baseline Emissions for Base Year and Milestone Years
(Annual Average - Tons per Day)

Pollutant	2012	2017 (Quantitative Milestone)	2019 (Attainment Deadline)	2020 (Quantitative Milestone)
PM _{2.5}	66.4	63.8	63.9	63.9
NO _x	540	398	353	330
SO _x	18.4	17.1	16.6	16.7
VOC	470	392	376	370
NH ₃	81.1	75.5	74.0	73.3

**Table 1 is from Table VI-C-3 in 2016 AQMP Appendix VI.*

To establish the RFP target in the milestone year of 2017, a linear progress is assumed between the 2012 base year emissions and the 2019 baseline emissions, which is then compared with the projected baseline emissions reflecting adopted regulations. Table VI-C-3A of the 2016 AQMP Appendix VI summarizes the RFP calculations, and is reproduced below as Table 2.

Baseline emissions, as shown in Table 1, incorporate emission reductions generated from control measures that are already adopted as rules, as well as the projected growth of each industry/sector. For example, 2017 baseline emissions are derived from the projected emissions from 2012, which includes all adopted rules that would be implemented (partially or fully) by December 31, 2017. Therefore, the difference between the base year emissions of 2012 and the baseline emissions of 2017 is driven by rules that are either partially implemented in 2012 or rules with implementation dates after 2012. Table VI-C-

4 of the 2016 AQMP Appendix VI provides a list of the SCAQMD adopted rules and regulations for stationary sources that were scheduled to be implemented after 2012. These rules and regulations accounted for the emission reductions in the baseline emissions of the future milestone/attainment years for the 24-hour PM_{2.5} standard. The corresponding information for California Air Resources Board's (CARB) mobile source control measures can be found in Attachment VI-C-1 of the 2016 AQMP Appendix VI.

Table 2*
Summary of 24-hour PM_{2.5} Reasonable Further Progress Calculations

ROW	CALCULATION STEP	PM _{2.5}	NO _x	SO _x	VOC	NH ₃
1	2012 Base Year Emissions (tpd)	66.4	540	18.4	470	81.1
2	Annual Percent Change Needed to Show Linear Progress (%)	0.55	4.9	1.4	2.9	1.2
3	2017 Target Needed to Show Linear Progress (tpd)	64.6	406	17.1	403	76.0
4	2017 Baseline Emissions (tpd)	63.8	398	17.1	392	75.5
5	Projected Shortfall (tpd)	0	0	0	0	0
6	Surplus in 2017 (tpd)	0.85	8.6	0.05	10.4	0.48
7	Emissions Equivalent to 1 Year Worth of RFP (tpd)	0.36	26.7	0.25	13.5	1.0
8	2019 Baseline Emissions (tpd)	63.9	353	16.6	376	74.0

*Table 2 is from Table VI-C-4 in 2016 AQMP Appendix VI.

The following sections provide a summary of updates for the major rules and regulations that account for the emission reductions between the base year emissions in 2012 and the baseline emissions in 2017. SCAQMD rules and regulations are discussed under the section "Stationary Sources Rules and Regulations." Updates on CARB mobile source rules and regulations can be found in the section "Mobile Sources Rules and Regulations."

STATIONARY SOURCES RULES AND REGULATIONS

PM2.5 Emission Reductions

PM2.5 emissions reduced from 66.4 tpd in the 2012 base year to 63.8 tpd in the 2017 baseline. The majority of the reductions are from on-road vehicles and other mobile sources, which will be discussed in the later section. One stationary source rule (Rule 444 Open Burning) had an impact on the PM2.5 baseline emissions (2016 AQMP Appendix VI, Table VI-C-4). The implementation of Rule 444 continued as anticipated, and full implementation occurred by 2017. As such, the emission reductions associated with Rule 444 implementation have been achieved for the milestone year of 2017.

NOx Emission Reductions

NOx emissions reduced from 540 tpd in the 2012 base year to 398 tpd in the 2017 baseline. About 96% of these reductions come from on-road vehicles and other mobile sources, which will be discussed in the later section. A total of seven stationary source rules had an impact on the NOx baseline emissions (2016 AQMP Appendix VI, Table VI-C-4). Five of the seven rules have been implemented as anticipated, and the emission reductions associated with these rules have been achieved for the milestone year of 2017. The five rules are listed below:

- Rule 1111 Reduction of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces¹;
- Rule 1121 Control of Nitrogen Oxides from Residential-Type, Natural-Gas-Fired Water Heaters;
- Rule 1146 Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators, and Process Heaters;
- Rule 1146.1 Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters; and
- Rule 1146.2 Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters

¹ Rule 1111 was inadvertently listed as Rule 1110 in the 2016 AQMP Appendix VI Table VI-C-4.

The other two rules were amended after the 2016 AQMP and resulted in minor changes to the baseline emissions that were not reflected in the 2016 AQMP. These two rules are discussed in more detail below.

- *Rule 1110.2 Emissions from Gaseous - and Liquid-Fueled Engines*
Rule 1110.2 was amended in June 2016 to provide relief for one affected facility. The 2016 amendment exempted the facility operator from the emission requirements of the rule, contingent on the facility submitting a retirement plan for the permanent shutdown of all equipment subject to this rule by the expiration date of the Power Purchase Agreement (October 1, 2022). The rule amendment resulted in negligible amounts (< 0.1 tpd) of emission reductions delay in NO_x and VOCs. However, it should be noted that a portion of these reductions will be recovered in 2022 upon retirement of the facility.
- *Rule 1147 NO_x Reductions from Miscellaneous Sources*
Rule 1147 was amended in July 2017 to reflect the recommendations made in the Final Rule 1147 Technology Assessment. The 2017 amendment allows in-use equipment with NO_x emissions less than one pound per day to defer compliance. The 2017 amendment also increased the NO_x emission limit for certain equipment categories and exempted new and existing equipment rated at less than 325,000 btu per hour. The 2017 amendment is expected to result in a NO_x emission reductions delay of up to 0.9 tpd. However, the emission reductions will begin to be recaptured starting in 2017 as the existing units are regularly replaced and upgraded over time, leaving less than 0.03 tpd of forgone NO_x emissions reductions associated with the exemption for equipment less than 325,000 btu per hour.

Overall, the amendments of Rule 1110.2 and Rule 1147 resulted in small amounts of delayed/forgone emission reductions (about 1 tpd of NO_x and about 0.01 tpd of VOCs). Given that the 2017 baseline emissions are 8 tpd and 11 tpd below the RFP targets for NO_x and VOC (Table 2), respectively, the impacts of the amendments will not interfere with the RFP demonstration in 2017.

VOC Emission Reductions

VOC emissions reduced from 470 tpd in the 2012 base year to 392 tpd in the 2017 baseline. About 97% of the reductions come from on-road vehicles and other mobile sources, which will be discussed in the later section. A total of three stationary source rules had an impact on the VOC baseline emissions (2016 AQMP Appendix VI, Table VI-C-4). Two of the three rules have been implemented as anticipated, and the emission reductions associated

with these rules have been achieved for the milestone year of 2017. The two rules are listed below:

- Rule 1114 Petroleum Refinery Coking Operations
- Rule 1177 Liquefied Petroleum Gas Transfer and Dispensing

One of the three VOC rules was amended after the 2016 AQMP and resulted in minor changes in baseline emissions that were not reflected in the 2016 AQMP. The amendment of this rule is discussed below.

- *Rule 1113 Architectural Coatings*

Rule 1113 was last amended in February 2016 to restrict the small container exemption (SCE) for high use coating categories; eliminate the SCE for categories that do not use the exemption and for high VOC specialty categories; lower some VOC limits; establish a VOC limit for new coating categories; and revise definitions, clarify rule language, and remove outdated language. The 2016 amendment is projected to result in approximately 0.88 tons of additional VOC reductions per day by 2019.

The 2016 amendment of Rule 1113 did not result in any forgone emissions from the previous (2013) rule amendment, the implementation of Rule 1113 continued as anticipated, and full implementation of the 2013 amendment occurred by 2017. As such, the emission reductions associated with Rule 1113 implementation have been achieved for the milestone year of 2017. And as noted above, the 2016 amendment will result in additional VOC reductions by 2019.

SOx Emission Reductions

As shown in Table 1, the annual average SOx emissions decreased from 18.4 tpd in 2012 to 17.1 tpd in 2017, primarily due to mobile source reductions. All the stationary source rules controlling the emissions from SOx emitting sources were fully implemented by 2012, and thereby have been reflected in the base year emission inventory. The SOx levels for stationary and area sources were roughly the same in 2012 and 2017 (10.26 vs. 10.27 tpd). Total mobile source emissions decreased from 8.12 tpd in 2012 to 6.77 tpd in 2017. SOx emission levels from on-road vehicles were very similar at 1.99 tpd in 2012 and 1.92 tpd in 2017. About 95% of the SOx emission reductions (~1.3 tpd) come from other mobile sources, primarily from emissions reductions from ocean going vessels (4.57 in 2012 to 3.04 tpd in 2017). The rules and regulations contributing to the SOx reductions from other

mobile sources will be discussed in detail in the next section, “Mobile Sources Rules and Regulations.”

NH₃ Emission Reductions

As shown in Table 1, the annual average NH₃ emissions decreased from 81.1 in 2012 to 75.5 tpd in 2017. All the stationary source rules controlling NH₃ emissions have been fully implemented by 2012, and thereby the impacts of NH₃ rules and regulations have already been reflected in the base year emission inventory. NH₃ emissions decreased significantly for farming operations, from 12.69 to 9.81 tpd between 2012 and 2017, due to significant reductions in farming operations in the Basin. Growth factors for area sources such as farming operations were projected by CARB, and are based on predictions of growth for different sectors in each county. Another significant reduction of NH₃ come from on-road motor vehicles. The emissions decreased from 18.1 tpd in 2012 to 14.9 tpd in 2017. About 60% of the emission reductions come from on-road motor vehicles, which include light-duty passenger vehicles, light-duty, medium-duty, heavy-duty trucks, as well as motorcycles, school buses, etc. The rules and regulations governing on-road motor vehicles will be discussed in detail in the next section, “Mobile Sources Rules and Regulations.”

Other Actions

In addition to the rules and regulations that account for the changes in baseline emissions in the 2016 AQMP, the continued implementation of Rule 445-Wood Burning Devices is instrumental in reducing 24-hour PM_{2.5} levels. Based on the implementation of Rule 445, if PM_{2.5} levels are forecasted to be above 30 µg/m³ (on a 24-hour average) during the Check Before You Burn season (November 1 through the end of February), a “no burn” alert will be issued. These alerts are sent out to subscribers on AirAlerts, posted on the Advisories section of SCAQMD’s website, posted to social media, and included in our Interactive Voice Response system via 1-800-CUT-SMOG. In addition, a press notice is issued to the media. The amendments to Rule 445 in 2013 lowered the mandatory winter burning curtailment threshold and applied the curtailment to the entire Basin (when triggered), potentially reducing Basin wide ambient PM_{2.5} concentrations on these episodic no-burn days by about 7.1 tons per winter day (assuming 75% rule effectiveness). In 2017, there was a total of 23 no burn days, refraining the public from wood burning about 19% of the time during the winter curtailment season (about 120 days). Given that the levels of ambient 24-hr PM_{2.5} are generally higher in winter, implementation of Rule 445 is effective in reducing peak PM_{2.5} days during the curtailment season, thus lowering the levels of 24-hr PM_{2.5} in the Basin.

Furthermore, after the adoption of the 2016 AQMP, SCAQMD amended Rule 1168-Adhesives and Sealant on October 6, 2017 to implement, in part, the 2016 AQMP Control Measure CTS-01: Further Emission Reductions from Coatings, Solvents, Adhesives, and Sealants, which targets VOC emission reduction of 1 tpd by 2023. The 2017 amendment includes VOC emission limits for numerous categories to achieve emission reductions of 1.4 tpd, exceeding the 2016 AQMP commitment. It should be noted that Rule 1168 was fully implemented in 2012, and did not contribute to RFP in the 2017 milestone year. Thus, the 2017 amendment of Rule 1168 will generate additional emission reductions of VOC beyond those anticipated in the 2016 AQMP.

MOBILE SOURCES RULES AND REGULATIONS

The RFP demonstration in the 2016 AQMP relied, in part, on reductions from California mobile source regulations that reduce NO_x, VOC, and direct PM_{2.5} emissions. While the South Coast PM_{2.5} RFP demonstration also included SO_x and NH₃ reductions, the State mobile source milestones focus on those CARB regulations that provide the most significant benefit to meeting RFP targets – mobile source regulations and their NO_x, VOC and PM_{2.5} benefits.

The mobile source emissions control program in California is the most stringent in the nation due to the severity of California's air quality challenges, the need for ongoing emission reductions, and the unique authority given to California as allowed by the CAA. California's comprehensive mobile source control program relies on four fundamental approaches:

- stringent emissions standards that minimize emissions from new vehicles and equipment;
- in-use programs that target the existing fleet and require the use of the cleanest vehicles and emissions control technologies;
- cleaner fuels that minimize evaporative and combustion emissions; and,
- incentive programs that remove older, dirtier vehicles and equipment and pay for early adoption of the cleanest available technologies.

This multifaceted approach has spurred the development of increasingly cleaner technologies and fuels and achieved emission reductions across all mobile source sectors that go far beyond national programs or programs in other states. Since California mobile source programs account for a significant part of the emissions reductions in the RFP

demonstration, it is appropriate to include milestones for implementation of mobile source regulations.

For the 35 $\mu\text{g}/\text{m}^3$ 24-hour PM_{2.5} 2017 qualitative milestones, CARB is reporting on the following three milestones:

1. Implementation of the *On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation* (the Truck and Bus Regulation) between 2012 and 2017 that required particulate filters and cleaner engine standards on existing California heavy-duty diesel truck and buses;
2. Implementation of the *Advanced Clean Cars Program* (the ACC Program) between 2014 and 2017 that required manufacturers of new light-duty passenger vehicles sold in California to limit emissions; and
3. Implementation of *In-Use Off-Road Diesel-Fueled Fleets Regulation* (the Off-Road Regulation) that began in 2014 for large fleets and in 2017 for medium fleets and limited emissions from existing off-road diesel vehicles operated in California.

Milestone 1. On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation Requirements from 2012 through 2017

The Truck and Bus Regulation provides substantial reductions in the years 2012 to 2017. The Truck and Bus Regulation was first adopted in 2008 and was amended in 2011; it represents a multi-year effort to turn over the legacy fleet of truck and bus engines and replace them with the cleanest technology available. The Truck and Bus Regulation includes phase-in requirements that begin in 2012 and become applicable to a larger percentage of the truck and bus fleet over time; by 2023 nearly all pre-2010 vehicles must be upgraded to have exhaust emissions meeting 2010 model year engine emissions levels. The Truck and Bus Regulation applies to nearly all diesel-fueled trucks and buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds, including school buses and some off-road agricultural yard trucks.

CARB implementation of the Truck and Bus Regulation provided PM_{2.5} emission benefits beginning in 2012. By 2016, the particulate filter requirement for heavier trucks (greater than 26,001 lbs. GVWR) was fully implemented in the South Coast Air Basin. The 2010 model-year engine requirement in the Truck and Bus Regulation also provided NO_x reductions beginning in 2015 when heavier vehicles with 1993 model year and older engines had to be replaced with 2010 model year engines. By 2016, all heavier trucks with

1995 and older model year engines were required to have a 2010 engine installed or replaced by a truck with a 2010 model year engine (Table 3).

Table 3
Truck and Bus Regulation Implementation through 2017
for Heavier Trucks and Buses*

Implementation Deadline	Vehicle Engine Year	Implementation Requirement
January 1, 2012	1996-1999	Particulate Filter
January 1, 2013	2000-2004	Particulate Filter
January 1, 2014	2005 or newer	Particulate Filter
January 1, 2015	Pre-1994	2010 Engine
January 1, 2016	1994-1995	2010 Engine

*<https://www.arb.ca.gov/regact/2014/truckbus14/tb14appa.pdf>, page A-18

In lieu of complying with the particulate filter schedule set forth in Table 3, heavier truck and bus fleets may alternatively comply with a phase-in schedule. Fleets electing this option must retrofit or replace with cleaner new vehicles to meet an annual PM filter percentage requirement (Table 4).

Table 4
Truck and Bus Regulation Particulate Filter Phase-In Implementation
Schedule through 2017 for Heavier Trucks and Buses*

Implementation Deadline	Percent of Fleet with Filters
January 1, 2012	30
January 1, 2013	60
January 1, 2014	90
January 1, 2016	100

*<https://www.arb.ca.gov/regact/2014/truckbus14/tb14appa.pdf>, page A-21

While lighter (14,000 to 26,000 lbs. GVWR) trucks and buses did not have a particulate filter requirement, they were required to replace 1995 and older engines with a 2010 model year engine by 2015. A 2010 model year engine includes a particulate filter so these new engines provide both PM_{2.5} and NO_x benefits. By 2017, all lighter trucks with 1997 model year engines and older were required to have a 2010 engine installed or have been replaced by a new truck with a 2010 model year engine (Table 5).

Table 5
Truck and Bus Regulation Implementation through 2017
for Lighter Trucks and Buses*

2010 Engine Requirement	Engine Year
January 1, 2015	1995 and older
January 1, 2016	1996
January 1, 2017	1997

**<https://www.arb.ca.gov/regact/2014/truckbus14/tb14appa.pdf>, page A-17*

Accounting for both primary and secondary PM_{2.5}, the contribution of heavy-duty diesel vehicle emissions to ambient PM_{2.5} levels have decreased 36 percent between 2012 and 2017. The Truck and Bus Regulation provided a significant portion of these reductions.

CARB has implemented all of the Truck and Bus Regulation requirements through 2017 and has met Milestone 1.

Milestone 2. Advanced Clean Cars Program Requirements from 2014 through 2017

NO_x emissions from light-duty vehicles in the South Coast Air Basin have been reduced significantly since 1990 and will continue to decrease through 2022 due to the benefits of California's longstanding light-duty mobile source program. Since setting the nation's first motor vehicle exhaust emission standards in 1966 that led to development of pollution controls like the three-way catalyst, California has dramatically tightened emission standards for light-duty vehicles. Today's new cars pollute 99 percent less than their predecessors did thirty years ago.

A key program responsible for the most recent emission reductions from light-duty vehicles is the ACC Program approved by CARB in January 2012. The ACC Program implements a package of regulations that provide ambient air quality and climate change benefits. One of the regulations, the Low Emission Vehicle III (LEV III) Program, includes criteria pollutant emission limits to be phased-in starting in 2014.

CARB implementation of the LEV III Program set an increasingly stringent combined Non-Methane Organic Gas (NMOG) plus NO_x fleet average requirement to reduce these emissions each year beginning in 2014 (Table 6). For particulate matter emission limits, the LEV II program set a limit of ten milligrams per mile (mg/mi) by model year 2016 and the LEV III Program lowers this limit to three mg/mi to be phased in starting in 2017.

Table 6
LEV III Program Implementation through 2017 for Passenger Cars,
Light-Duty Trucks, and Medium-Duty Passenger Vehicles*

Model Year	Fleet Average NMOG + NOx (grams per mile)	
	All Passenger Cars; Light-Duty Trucks 0-3750 lbs. loaded vehicle weight	Light-Duty Trucks 3751 lbs. loaded vehicle weight to 8500 lbs. gross vehicle weight rating; All Medium-Duty Passenger Vehicles
2014 ¹	0.107	0.128
2015	0.100	0.119
2016	0.093	0.110
2017	0.086	0.101

*<https://www.arb.ca.gov/regact/2012/leviiiighg2012/levfrorev.pdf>, page 59.

¹2014 model year is equivalent to the LEV II 2014 NMOG fleet average.

All automobile manufacturers selling cars in California are required to meet the LEV III fleet average requirements by 2017. Benefits from the ACC Program will increase over time as new, cleaner vehicles enter the fleet displacing older and dirtier vehicles. Medium-duty vehicles in the LEV III Program follow a similar schedule lowering NOx and NMOG emissions through 2022. All together, the contribution of light-duty vehicle emissions to ambient PM_{2.5} levels have decreased 38 percent between 2012 and 2017. The LEV III Program was responsible for a significant portion of these reductions.

CARB has implemented all of the LEV III Regulation requirements through 2017 and has met Milestone 2.

Milestone 3. In-Use Off-Road Diesel-Fueled Fleets Regulation Requirements from 2014 through 2017

On July 26, 2007, CARB adopted the Off-Road Regulation to reduce PM_{2.5} and NOx emissions from in-use off-road, heavy-duty diesel vehicles in California used in such applications as construction, mining, and industrial operations. The Off-Road Regulation requires owners to modernize their fleets by replacing older engines or vehicles with newer, cleaner models; retiring older vehicles or using them less often; or by applying retrofit exhaust controls. The Off-Road Regulation also imposes idling limits on off-road diesel vehicles in addition to reporting and labeling requirements.

Beginning on July 1, 2014 for large fleets and on January 1, 2017 for medium fleets, the Off-Road Regulation required increasingly stringent fleet average indices for Off-Road diesel-fueled fleets. A fleet average index is an indicator of a fleet's overall emissions rate

of diesel particulates and NO_x based on the horsepower and model year of each engine in the fleet. All fleets were required to meet, or be below, their average target in each year (Table 7) or demonstrate Best Available Control Technology (BACT) requirements by turning over or installing Verified Diesel Emissions Control Strategies (VDECS) on a percentage of the total fleet horsepower (hp) that was subject to BACT requirements (Table 8).

Table 7
Off-Road Regulation Implemented through 2017*

Implementation Deadline	Fleet Size (total fleet hp)	Implementation Requirement
2014 to 2017	Large (> 5000)	Met Fleet Average Target
2017	Medium (> 2500)	Met Fleet Average Target

*<https://www.arb.ca.gov/msprog/ordiesel/faq/fleetaverage.pdf>

Table 8
Off-Road Regulation Optional BACT Requirement*

Implementation Deadline	Fleet Size (total fleet hp)	Percent Fleet Turnover or VDECS Installation
2014	Large (> 5000)	4.8
2015 to 2017		8
2017	Medium (> 2500)	8

*<https://www.arb.ca.gov/msprog/ordiesel/faq/bactfaq.pdf>

CARB implemented other requirements including a ban on fleets adding off-road vehicles with Tier 0 engines effective January 1, 2014. And, effective January 1, 2014 for large and medium fleets and January 1, 2016 for small fleets, a fleet could not add any vehicle with a Tier 1 engine. All together, the contribution of off-road diesel vehicle emissions to ambient PM_{2.5} levels have decreased 17 percent between 2012 and 2017. The Off-Road Regulation provided a significant portion of these reductions.

CARB has implemented all of the Off-Road Regulation requirements through 2017 and has met Milestone 3.

Mobile Source Program Conclusion

CARB has met the 2017 quantitative milestones. These milestones ensure emissions were reduced by 2017. CARB's mobile source program will continue to provide emission reductions beyond 2017.

SUMMARY AND CONCLUSIONS

The Basin is classified as a “serious” nonattainment area for the 2006 24-hour PM_{2.5} standard, with an attainment year of 2019. The 2016 AQMP includes an updated emission inventory and attainment demonstration, as well as the RFP plan, for the 2006 24-hour PM_{2.5} standard. In the 2016 AQMP Appendix VI-C, the emission reductions required to demonstrate RFP between the 2012 base year and the 2019 attainment year were quantified. For the 2017 milestone year, RFP is achieved based on baseline emissions, which incorporate emission reductions generated from control measures that are already adopted as well as growth factor projected for each sector. The rules and regulations that contribute to the change in baseline emissions were identified in the 2016 AQMP for stationary sources (Appendix VI, Table VI-C-4), and for mobile and area sources (Appendix VI, Attachment VI-C-1). As described in the previous sections, SCAQMD has reviewed its commitments in the 2016 AQMP, has provided updates to the major rules and regulations that contribute to RFP, and has verified that the emissions reductions needed to demonstrate RFP have been achieved. The majority of the stationary source rules and regulations were implemented as anticipated and the emission reductions associated with these rules have been achieved for the milestone year of 2017. Rule 1110.2 and Rule 1147 were amended in 2016 and 2017, respectively, and resulted in a small amount of forgone / delayed emission reductions for NO_x and VOCs. As the result of these two amendments, the net 2017 baseline emissions of NO_x could potentially increase from 398 tpd to 399 tpd, which is still below the RFP target of 406 tpd (Table 2). Similarly, the net 2017 baseline emissions for VOC could potentially increase by 0.01 tpd. The minimal increase in the VOC baseline emissions likewise does not interfere with RFP demonstration. For mobile sources, the reported milestones ensure emissions were reduced in 2017, and CARB’s mobile program will continue to provide emission reductions beyond 2017.

Given the above information, we conclude that the emissions reductions needed to demonstrate RFP have been achieved, and that the quantitative milestone has been met in year 2017.